Oral History Cover Sheet

Name: Bruce Zeller
Date of Interview: August 23, 2004
Location of Interview: Desert National Wildlife Refuge, Nevada
Interviewer:

Approximate years worked for Fish and Wildlife Service: 27+ (at time of interview)
Offices and Field Stations Worked, Positions Held: Refuge Biologist, Desert National Wildlife Refuge
Most Important Projects: Bighorn Sheep reintroduction; building water retention wells/systems for sheep
Colleagues and Mentors: Bob Fields; Bob Yoder; Dave Brown
Most Important Issues:

Brief Summary of Interview: growing up on a farm in Nebraska; going to school; summers w/ Izaak Walton League internships; accepting full-time federal employment w/Corps of Engineers; going into the Army when unable to find other federal employment after school; work with plague vectors during Army career; transferring to FWS after Corps of Engineers; variety of work/jobs done on refuges w/small staff. Relocations of bighorn sheep, building water retention wells/ponds; bighorn biology; building relationships with and working w/other federal agencies, state agencies, NGOs, and avocational environmental/conservation/hunting groups; benefits to wildlife of building water retentions and when/where not to build them; benefits of retaining some areas of total wilderness for recreation and wildlife preservation; constraints of time/danger/equipment needed for accomplishing tasks in area the size, remoteness, and as non-developed as Desert NWR; advice to beginning biologist and FWS; problems w/communications and other technologies impact (or lack thereof) on Desert NWR; impact on the resource from the pressures from upper management and Congress to open more areas/experiences to the public and the emphasis of documentation of such efforts being detrimental to the funding of actual resource management/improvement.

ORAL HISTORY

Of

Bruce Zeller

Wildlife Biologist
Desert National Wildlife Refuge
Near Las Vegas, Nevada
Date of Interview: August 23, 2004

Oral History Program
U.S. Fish and Wildlife Service
National Conservation Training Center
Shepherdstown, West Virginia

Oral History – Bruce Zeller
Desert NWR, near Las Vegas, NV
Interview Date 08-23-04

How did you first get into the field of wildlife biology? Was it hunting, books, some teacher that inspired you to do this?

It was mainly the hunting and fishing aspect. I grew up on a farm and when I wasn't helping my dad or my grandpa in the fields, I was down on the river either fishing, or chasing squirrels till I graduated up to larger game. So it was primarily I got interested through my hobby on the farm down there.

Where did you grow up?

A little town in central Nebraska. Ravenna is where I went to high school, which has a population of about 1400. But I went to country school until eighth grade at a little town with a population of about 10 in the city and all the other kids were from the rural area and bused each day for K – 9th grade.

Tell me a little about how you first entered the field of wildlife biology. You went to school and then went into the military pretty much so you could get a job with Fish and Wildlife Service later. Is that what happened?

That is correct.

Tell me more about that.

I'll back up and start a little more about how I got pulled into the path of career biology and go into the area you are talking about. When I graduated from high school I was going to go to the University of Nebraska and I wanted to major – I had selected wildlife- and at that time the Izaac Walton League had a program where they would take kids out of high school that were entering college in the wildlife field and send them out for a summer between their senior year in high school and their freshman year in college and let them work on a refuge. So I, my twin brother, and I think one other kid in the state of Nebraska got selected for these Izaac Walton positions. I went to Lostwood Refuge in North Dakota that summer and worked before I ever got any formal training in wildlife, and then went on to the university and took my wildlife courses. I was still convinced that was what I wanted to do, so each summer between years in college I worked on refuges. And even after I graduated with permanent positions being so hard I took seasonals after graduation so I had a total of five seasonal positions and was still getting no closer to a permanent appointment than I was when I got out of high school. So I decided if you couldn't make them, it was time to join them, so I went to the Army and got my veteran's preference, and then took the first federal full-time employment after that, which was a job with the Corps of Engineers, because I just wanted that permanent status. I knew I could transfer back in for I had all the knowledge and skills to work for the Service. I got out of the military service and worked for the Corps of Engineers on the Mississippi for six to eight months then transferred back out here to begin my full time career.

You said you knew you could get back into the Service. Was there ever any other thought of any other agency or wildlife biology job?

No, you know, after my fifth seasonal and I had no permanent offers on the horizon. Before I went into the military, I decided there were other agencies that have biologists and I needed to expand my efforts here. So I put in for some jobs with the Soil Conservation Service because the Forest Service was just as tough as the Fish and Wildlife Service at that time. I needed to pick an agency where there wasn't quite as much competition. And I did put in for resource-oriented positions for the Soil Conservation Service, which is now called the Natural Resource Conservation Service. And it was kind of frustrating, because I went ahead and signed the papers for boot camp and then I had a three or four week delay before I actually got shipped off to my boot camp, and then I did get some offers from Soil Conservation Service to interview for some positions, and it was too late then for, you know, that when you sign your enlistment papers you are committed for three years and there's no backing out of that, short of going AWOL and that's not going to do you any good. But that was all right, I had a very good military career. I got signed up on a program in California where they were doing research on plague and it was a guaranteed job with the Army so I went out there and went to work in this research lab and I trapped ground squirrels for two years, drew

blood, collected ecto-parasites, identified them as genus and species and shipped them back to Walter Reed in Washington and they ground them up and put them in a media to test for the plague bacteria. It was some of the most intensive research I have done in my whole career. I have not done anything that detailed working for the Service as I did for the Army. And my supervisors were either civilians in the Army or else they were Colonels with a Ph.D. in entomology or some other related biological field. These were not Academy graduates who know nothing about biology. They were scientists, and they were my supervisors.

That is pretty fascinating and I kind of thought a stint in the military means something totally unrelated to something you want to do. But I guess that helped you some way in this career, too.

It did. And at that time I was married and I'm not any longer, and my wife was a teacher and the kids were getting to her and she got a similar job assignment in the same laboratory. She was a math major so she went into their statistical department. So we went in as a husband and wife team and we were able to stay in San Francisco for three years, have our own apartment and it was not much different than having a civilian job other than you pull guard duty on the weekends and stood inspections. But overall, the military end of it wasn't so intense that it made the job miserable.

Interesting. There is a question here that says how did you decide to focus on desert bighorn sheep? I assume that came after you started working here.

That kind of ties into really, my preferences even before I came here. My seasonal, of course, were in the Midwest, and they were all waterfowl areas. But my first love when it comes to wildlife is ungulates –big ungulates, elk, deer, and bighorn sheep. And when I was at the Corps of Engineers looking for a job to transfer out to I wanted to go somewhere I could work with big game. Then, of course, I got here and there was big game and I enjoyed it because it involved aerial surveys, horse back work and all that stuff. And then as I continued to work with the desert bighorn, then it became more and more fascinating the more you learned as they are unique species in terms of what we have in ungulate populations across the country. As you know, they only occur in the southwestern United States so there is a uniqueness there that maybe white tail deer, or elk or antelope wouldn't have - something really broad ranging.

Where did you work before the Fish and Wildlife Service?

I guess I could list those places I worked seasonally. That first year out of high school I worked at Lostwood in North Dakota, fairly near the Canadian Border. Then I went down to South Dakota to Lake Andes Refuge Wetland Management District and then in the summer of 1970, I went to Crescent Lake which is primarily a grassland refuge in western Nebraska. And then I took a break and worked at home on my uncle's farm for a summer. Then I went back the next summer at J. Clark Salyer in North Dakota for Bob Fields who was a terrific Refuge Manager and has quite a reputation of doing some outstanding work for the Service over the years. He was a project leader at J. Clark Salyer at that time. And then I worked one more season at Benson, Minnesota, there at their wetlands district and after leaving there decided that was enough seasonal work. I was married at that point and I needed a steady income and needed to do something even if that required going into the military to get headed in that direction.

What did the Desert National Wildlife Refuge look like when you first arrived? Was it in the late l970's?

It was May 1978. To me, that's a positive part of the story of my career. It looks pretty much today as it did in l978 and I read a lot of the old reports as I had done research on different subjects by reading back the narratives dating back to 1939, and it's been one of the areas that has been relatively untouched by man. There has never been a big push to do it, economic reasons. Logging, grazing, mining has never been an active industry here. Of course, we have had the military here since the early 40's, but since that time not much has changed. They have continued to restrict their air to ground ordinance delivery to where there is no vegetation or wildlife or anything. We have been able to preserve a significant chunk in southern Nebraska [Nevada?] as it existed at the turn of the century when the Mormon settlers first came here and saw it. That can't be said about the surrounding federal lands – the Lake Mead National Recreational Area,

Toiyabe National Forest, the BLM land. They have all got paved highways, subdivisions. Even the parklands cater to their constituents by putting in concessionaires and tourist-paved tour loops. Their lands don't look like they did at the turn of the century. Well, the lake wasn't there at the turn of century. Lake Mead was built in the 30's so even that park does not resemble what it did when the Mormon settlers first saw the Colorado River as it runs through southern Nevada. So that is something I feel good about. I can't be credited with that. I think that is something the Service has done right. Personally, I would like to see them continue to leave it that way. Don't get too involved to catering to public use and build a lot of paved tour routes and photo blinds, and leave it aside as a primitive area where the hardy people that have the pioneer spirit can still go out and do their thing. The more civilized folks want to recreate with cell phone coverage and GPS coverage they can go to the developed lands, either Lake Mead Recreation Area, Toiyabe National Forest.

This kind of gets into this whole kind of modern movement, you know with our big SUV's we want to be able to access every little stop with minimal effort and so your idea is you would like to see people do it the way they used to.

Right. And I think the Service is pushed toward getting more public involvement in support so we get better funding from Congress, is to bring the public out and let them enjoy our land. And I think in some instances that is the right thing to do. We have refuges where we can cater to that type of visitor who is maybe physically less qualified than others to go into the back country, and develop support by putting facilities out there. But in the case of this refuge, I don't feel that is the right direction to go. I think we can do it through off-site, maybe put up a visitor center right on the edge of our boundary and do our environmental education and our building of a constituency basically off-site. And before they leave that facility then they will be told to recreate out there – it's a little primitive, don't go beyond this visitor center if you are not equipped to handle it.

What was it like living on a refuge when you first started?

For me, it was great. I grew up on a farm where other than one house I didn't have any close neighbors. To come back to a rural setting where I didn't have neighbors, and had a pasture with some stock in it, it was like dying and going to heaven after being stuck in San Francisco and the traffic for three years and then back in Illinois or Iowa. I was between Illinois and Iowa on the Mississippi River but town of Moline and Davenport, big cities for the Midwest, and I am not a city boy. So when I came here, living on the refuge was great. And the fact that I was the only person living here and I had responsibilities of mowing, fixing sprinklers, and helping the maintenance men do that stuff; it was nothing new to me; I had been doing that all my life on the farm. I didn't mind going out there in the evening and irrigating, cutting the lawns, whatever was required to make the operation run smoothly. Honestly, I view myself as much better maintenance man than in biology. I have just had some training and some work experience that allows me to do my biological assignments effectively. But instinctively, my breeding is to do maintenance, or run equipment or grow things, you know being a farmer. I would have been a farmer if I could have made a living farming. I like to till the soil, plant the crop and in the fall go out and reap the harvest and feel that satisfaction that comes from starting something from seed. But in my case, it wasn't a realistic option. My dad had a small farm and as long as I can remember, his advice was to get to college and get an education and do something different, as there was no future in farming on a small scale.

Do you think your experience here as a biologist generally reflects some of the same experiences that other biologists have on other refuges that started the same time you did or is this different, and did you have more of these alternative responsibilities like maintenance because this was such a remote refuge? Or was that just a sign of the times?

It was a sign of the times, but even though I was doing other things beside biology, helping with some of the maintenance, and at that time I had law enforcement credentials, and I was spending a month in the fall (pause) since we just had the sheep to take care of, I still had a surplus of time. I still had the time to do all the duties required to manage the sheep as well as take on these other things. Where at other stations maybe you were doing a lot of different biological tasks, your time would have been watered down by

maintenance and you couldn't have fulfilled your biological duties. In my case, where I could focus on the sheep when I had free time, and then when I had spare time I could do the maintenance stuff. No, the maintenance didn't distract from my sheep. And actually, my experience over the period of time we are talking about, from the late1970's to the present 2004, I probably did way more hands-on biology than any of my peers because you are coming into the age of NEPA where people are spending a lot of time preparing environmental assessments. Other biologists were starting to get deeper into planning, and are spending a lot of their time preparing the North American Waterfowl Management planning. Duties like that were more office or inter agency coordination. In my case, when I was doing sheep biology, I was doing hands-on biology; I was flying surveys, building water holes. I was out there setting trap sites, dropping nets on animals, putting radio collars on them, and after that was completed, I was spending time tracking the same individuals down, recording locations and feeding habits, and lambing patterns, and all that stuff. It really wouldn't be fair to say that, because I did other non-biology things that I didn't still spend a heck of a lot of time working with sheep. And I had some good mentors. The biologist that worked with fish and game here, Ed Broth, when I got here he had just finished a four-year study of big horn sheep and I started flying surveys with him. And he taught me aerial classification techniques and kind of where to look, what parts of the range were used more than others so that when he was gone and I had to go back and do the surveys on my own from the helicopter, I wasn't starting from scratch – I had some pretty good clues to where I was going to find the sheep.

We started talking about what it was like living on the refuge back then. More of it was primitive then and has it changed now, and has the change been recent or only a few years after you started? Tell me about the whole chronology of living here on the refuge and some of the thing you had to do and you don't have to do now.

I still basically do the same stuff now that I did in '78. I mean it was all proposed for wilderness in 1974, and that preceded my tenure here. So when I got here, I would have to go either on foot or horseback up them canyons to inspect and repair those water developments. And in 2004, I still have to go on foot or horseback to those same locations. I guess things would have changed a lot for me the past two or three years since all time prior to that it was just me and the maintenance guy and sometimes we didn't have a maintenance guy, and sometimes it would just be just me. But in the last four or five years, we have jumped into to this arena where we are out actively seeking partners for doing more outreach effort or trying to get into some off-site environmental education. We've got dollars coming in from some outside sources now for planning and the coordination is stepped up. But in these five years, all this has occurred; we have finally got another person on staff. And that person is now my supervisor. They are the Refuge Manager where I was always Refuge Manager/Biologist. They are Refuge Manager and that's been their burden to bear to attend these meeting to cross all the "t's" and dot all the "i's", so my job hasn't changed. I feel very blessed for that. There are not many people in their career that don't get drug into this whirlwind affair of politics and meeting going, and budgeting and so far from many of their aspirations when they were in college. I have been very fortunate in that regard. Since I'm kind of a fossil, I hate to think that is the future of refuge management. The people that come after me are going to have to do all these administrative tasks and are not going to be allowed the luxury of going to the field and doing some of what I consider the nuts and bolts work. I have this fear that that will happen with my replacement because the burdens on the administrative staff are getting heavier and heavier, that they are going to suck my replacement off as their assistant and the sheep are going to suffer. I have built a tremendous working relationship with the Nevada Department of Wildlife and also our local volunteer group, the Fraternity of the Desert Big Horn. We work together as if we all wear the same hats. Nobody is better than anybody else when it comes time to catch sheep, to trans-locate them, or build a water hole to give them some summer moisture – we just work side by side, titles and agencies are meaningless. My replacement comes along and he is not allowed to interact with our sister agencies and the non-profit group like that and some of the water holes and the sheep monitoring go down, then these people are not going to be as willing to work with us or support us; however, you want to say it as they have been over my career because we have just all believed the sheep were the most important thing and, as a group, if we put our heads together, we could get it done. But if we bail from that group, we could lose some strong support and maybe even lose some resources because we are not doing as good a job of managing and worrying too much about the

administrative stuff or the things that are important to upper management, catering to our congressional aides and all that instead of to the resources.

That is very interesting. Maybe you should talk about the Fraternity of the Desert Bighorn that work to protect the sheep and keep their numbers up. But there is also a hunting group. And there are a lot of folk that are not coming from a hunting background anymore, that are in biology and might see that as an opposite of what the biologist on the refuge should be doing in the future. But, in that realm of what they might consider is better for the sheep. The sheep may end up suffering to their going into more paper work, instead of being out with this hunting fraternity that's working for the sheep's benefit. Do you see where I am going on this?

Yes, I do. And I can understand why from the outside looking in, that is the view you would have. And there are hunters in the group, but you have to remember hunting sheep is basically a once-in-a-lifetime experience. So this core of people that work very hard, either shot a sheep 25 years ago, but they have so much respect for the species, they continue to work knowing that they are not going to get another tag. They are not even eligible to apply for another tag for ten years after they harvest the ram. And it took me 25 years to draw my first tag; so roughly, from time you kill a sheep to the time you may get to go hunting again might be 35 years. But in that 35-year period, they are working their ass off really not for another tag, for that is not a realistic goal, it is just their belief and it is such an extremely valuable resource and whatever they can do to better its chances to maintain its existence or increase, they are willing to provide all the muscle and manpower that they can muster to make it better. And it's not your NRA type, real politically-oriented group. They are as much into the biology part as they are of the hunting. I mean they want to be called up when we are doing trapping and transplant; they want to help with that. They want to help with the water projects and they will go and testify in front of the commission. And they may go and testify to lower tag quarters. Because they feel like, well, they have been hiking around in that area where they built their waters and there are not that many sheep there. They could very well go in front of the State Game Commission and testify that that is too many tags. I have been working in there, building water, trying to rebuild that population – I don't want you to harvest at that level yet until we get our work done. They are not your typical hunter group, they are more critter-oriented than they are harvest-oriented. And their membership has some people that have been honored at the state level and at the national level for their conservation work. The Foundation for North American Wild Sheep, a tremendous organization - you can help me on this, he hiked all over the northwest with this famous videographer. He was a hunter, but his livelihood was making videos. (Not Marty Stouffer) No, his name was like Kodak or... but, anyway, there is an award in his honor that the Foundation for North American Sheep gives out each year. Ed Tribble, one of the founding fathers of this organization, was the first one to get that award, the National Conservation Award for Wild Sheep. Nevada is a small state. When I came here, there were 300,000 people in the valley. Now there are 1.5 million. But when my friends that were in this club lived in Las Vegas, there was one high school. And they went to school with classmates as Harry Reid, Gibbons. They can call those people and talk to them like you and I are talking right now, and get some action out here at the congressional level. The group of people I am talking about in the club and in Congress are both getting on up in years. We are talking people in their mid-sixties and early-seventies in this little local club and in the near future won't have the political clout that it does now. And they don't pull strings very often. I think I have seen them pull it just once in the 15 to 20 years I have been involved in it. But push come to shove, they can. They still have that connection because they date back to when we were a small state and our senators came from that time period when it was a small state and everybody knew everyone else. And I would hate to see management either at upper level locally or even worse than level, abuse some of the things that we have done cooperatively in the past because they may think many of these people are just mechanics or sheep rockers. But, they still went to high school with who have the power, and it could come back to haunt them. In fact, I had this conversation just yesterday with a friend of mine. Because that is one of the things I get when I am in retirement. They know I am retired and have enjoyed working with me, and they have two questions: "What are you going to do when you retire?" and I tell them I am going to my farm in Nebraska. And the second question is, "Who is going to replace you and are they going to work with us?" And I don't quite know how to answer that, for I can't predict the future. And it is a little scary. The person they select to replace me may meld in and work as a partnership with them and they may not. And I hope they do.

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....work as an accountant or something and they are never exposed to field level wildlife biologists, something they saw on Disney channel "Bambi", and they thought, you know, I would like to work with deer in my career, so they choose wildlife but they have no first-hand knowledge of the land, or living off the land. Their conception of a biologist is totally different from someone coming from a rural background. For me, harvest is no different than shooting a sheep and grinding it up and make sausage, and no different than going out to our hog lot and hitting a gelt between the eyes with a sledge hammer and taking him in and grinding him up and make breakfast sausage out of it. To me, we are omnivore people; we eat meat and vegetable matter and it is just something that happens so that I can survive, that I can get my nourishment to get up and do my work the next day. Something dies, and something else can live. But that's not the mind set of much of society today. We have all had this preservation rather than conservation philosophy. I think we should conserve but you can't stop wildlife. That's a concept that has been lost. We can stop hunting tomorrow but that sheep that is 10 years old, is not going be here next year, he's dying. We can't stop wildlife from carrying on for the next decade. It is a renewable resource. We can't stop providing for future generations, we can use it before we lose it or you just let it be lost. I think you have to be very conservative on your harvest strategies today because that can come back and bite you. You know, if you are out there harvesting what you consider the maximum level and then you have a population decline, somebody who is anti-hunting has got a pretty good lever and say, maybe you were right on the edge there and you were part of the problem. But as long as you approach your harvest program from a conservative standpoint, I think hunting as recreation will always be defensible. In terms of biology; it may not be in terms politically when you get into the emotional arena of whether it is ethical or unethical. That is not for me to decide. It is only for me to decide whether the resource can tolerate it or not. Not whether harvest is ethical or unethical. Of course, I believe it is ethical. You know, we are all entitled to our opinion – it's America. That is why we like living here. I don't argue with that; I just try and explain where I'm coming from and I'll listen and we can agree or disagree.

What was your first task as a biologist here at Desert NWR?

As I remember, the first major task I had was to go out and get with the state biologist -- the guy I was mentioning as a good mentor, Bob McQuivy, who just finished writing up the results of his four-year research on desert big horn-- and go out with him and set up some traps at Walmp Spring and try to make some captures for the state that they were going to take the animals to another area in Nevada that they were trying to re-populate. So I spent the most of that first summer setting up the trap and monitoring it. As luck would have it, we didn't capture any animals. We never could get a big enough group to come in at one time to justify closing -- at that time it was a corral affair, it wasn't a drop net -- of closing the gate because we were way down in this kind of isolated canyon that had jeep trail down it to haul two animals out all the way to central Nevada. And that is no way to capture sheep for relocation anyway; you want a group of 10 or more at least to release so that they will stay together and help each other survive and produce offspring. You don't want to relocate animals one at a time because if you take one up there this month, and one the next, they may not see each other for a year, if the first one went off to the other end of the mountain range. You know, you are trying to take somewhat of a social animal as a group and take it from one area into another and release them that way. That was pretty much my first task. I would just then begin to start to go out and do the water hole maintenance stuff on foot and horseback.

That must have been really fun, though. I think the West is so idealized with the cowboy and Indian. And then to get a job where part of it was to be allowed and necessary to ride a horse or a mule out into the back country.

Yeah, it was really neat to actually do the things that you either saw in a western movie or as you visualized people doing wildlife management in the West. Because as you said earlier, a lot of the people who were hired at that time frame came west, but they didn't actually have a western career experience. They didn't do anything different out here than they would have done on the East Coast. They went to public meetings or they flew waterfowl surveys over a small little postage stamp marsh that you could equate on the eastern

seaboard. They weren't doing anything in the wide-open spaces in the mountains of the West. They were doing the same things on the West Coast in the valleys that would have been doing on the East Coast. Any experience they had in the mountains on horseback or wide-open terrain would have been on their off-duty time, or on their vacation time. So, in that respect, I guess they gained something by transferring from an eastern refuge to a western refuge. As far as on-the-job experience, majority of them probably didn't get to do anything more exciting on their West Coast job as they did on the East Coast job.

What was that like – you had grown up on part of some big lands in the Dakotas and Nebraska but the vastness of this refuge, it's 1.5 million acres? Am I correct on that?

Yes, you are.

It's a special experience trying to work and trying to just get anything done because you are always traveling. I guess you could talk about some of the problems you have had and challenges you have run into just trying to get the work done in such a vast area that is only equivalent to some the lands in Alaska?

Really, the size of it may have made it somewhat more challenging. You just have to have a lot more patience. It is not a case where you could go to the shop and gather up your tools and load them in the back of your truck and run out a quarter mile and repair that fence, come back in an hour later and tackle another task. Your work site might take you three or four hours to get there, depending on the site; that might require pulling a horse trailer for two hours and then riding for two hours. You are going to get there; you are just not going to get there right away. So you have to be a little more perseverant, I guess, a little better word than patience. You have to persevere and, of course, you are going to be dealing with some pretty high temperatures if you are doing this work in the summer time. It might be once you get out of that air-conditioned truck and start up that mountain with your back pack or your horse, it might be 110 degrees out and you have to adjust and keep doing it. That is where some from a rural background is not so intimidated – you are used to working by your self. Your father would send you on a tractor to work all day by yourself and it was your responsibility to assume that task and accomplish it. So to me, that wasn't very scary to be sent for an eight- to twelve-hour day by myself to do something. You do that on the farm all the time. I like to work alone a lot because I am more focused on what I am doing and am not piddling around wasting time. I am up there getting the work done and getting back. Someone that is used to working in a group probably would have been pretty intimidated. And even though the refuge is big the way our geography lays out here, all our mountain ranges run north-south and you can hardly get lost. You can get a long way from home, but are still going to know where home is. Because it is open. Once you get to the top of that mountain, your vision isn't obscured with trees. For the most part, you are going to be able to look all the way to the valley and it might be 10 miles away but you can at least see the road that you came out on earlier that morning. It's going to take you some time, but you know that if you are physically fit, you can make it back to your vehicle and you are going to get home. You are going to be hot and tired but you are going to make it home. You know in a way, that is a challenge, that makes your job more exciting to be able to go to a site that remote, spending all the time getting there, repair a broken pipeline or whatever the problem is, get it fixed, and then get back home. It is a really good feeling. When you pull in at night you may be hot and tired but you feel like, damn, I did something today. You know other than cross a "t" or dot an "i", I got something done today that may make a difference. Maybe that tank is going to get full and when the temperature gets even worse, and the sheep come in, they are going to have something to drink, because I went up there and I fixed it. Some people don't have any sense of direction. I guess if you are an urban person with a very poor sense of direction, the size of this area would certainly intimidate you. For you still need to be able to orient a little bit – well, now, you don't, for all our college graduates are GPS trained, so they are going to have their units with them, and they are going to plug their coordinates of their truck and the coordinates of their destination and they can use electronics to guide them. But I have never used GPS in my career to get where I am going. I can pick up a topo normally and just glance at it and say, yeah, I just go up this drainage, turn off at this side draw, and then I'm going to wind up this hill and then I'll find that water. For I didn't have anybody to show me where any of the waters were. There are 34 springs on this refuge. Some are in obvious places at the end of a two-track dirt road, but there are probably at least 50% that are up in some canyon in the sheep range that you have at

least some primitive navigation skills or some intuitive ability to follow directions and contours to locate that water. There are no signs to any of these places. I mean, you are traveling across country.

I asked you about technology a few times. Talk about phones, when and where you haven't had those here in your career and other high tech communication.

That is an interesting area. For when I moved here, we had no dial phones. We just had an overhead line that came in from the highway and my phone number when I lived in this residence where we are doing the interview, was Corn Creek #1. Then I moved into a different residence later on in my career and my number was Corn Creek #3. We only had three phones on the refuge. The office was two, this quarter's was one, and the other quarter's was three. And everything was operator-assisted. You picked up the receiver, like the old days when you cranked the thing on the side of the phone to ring the operator, you know like they had to do on "Hee Haw." Only in this case you didn't have to crank, you just had to pick it up and the operator would eventually pick up on the other end and then you would have to verbally tell her the number you wanted and where you were calling. And when the phones worked, and a lot of times they didn't, because that old line coming in off the highway was broken about 50% of the time; but when they worked, calling out wasn't the problem because I would get a local operator and they normally handled calls from Corn Creek and they would put me through to the number I wanted. It was people trying to call you that went insane. Like my parents were alive at that time, and living in Nebraska, when I started my career, and they would try to call from a dial phone and they had to ring a Las Vegas operator and then had to tell that operator that their son was at toll Corn Creek number #3. They called it a toll station and that operator had to ring that number before the connection was made and it might take them hours to get through. Some days they would just get frustrated and give up if they got an operator who had never heard of a toll Corn Creek #3. And we had that system from '78 and my memory is going, but along about 1990, we were approached by a cell phone company to put a tower out here which was probably a mistake, but we wanted phone service so we agreed to allow them to put their tower out here if they would give us some cell coverage. So, since 1990 or shortly thereafter, we have had cell phones, and communicating with the outside world hasn't been as difficult. But, it wasn't until after 2000 that we actually got a land line. So as you and everyone else knows, you can't have internet connection or computer service unless you have phone land line – well you can now, for they have satellite links for computers, but that is relatively recent too, within the last four to five years, where it is a reasonably dependable technology. So, we didn't get our first computer out here until around 2000 or shortly there after. So I have not had to deal with email requests and rapid turnaround on computer-generated exchanges of information. For most of my career, when somebody that wanted something from me had to call me at Corn Creek #3, and tell me what they wanted and I had to put it in the mail box and send it to them. In a lot of ways, that was good way of doing business because you got to know people. You talked to them on a not a face-to-face basis, but at least directly, not electronically. By the inflection of their voice, you could tell if they need it quick and you knew exactly what they wanted because they were verbally relaying what they wanted. And I think we live in an age now where people want their information and they want it instantaneously. It reminds me of the old saying "poor planning on your part don't constitute an emergency on mine." If you needed this information, don't email me an hour before you need it; call me a week ahead of time so I can gather the data and put it in a presentable format and get it back to you.

What was the wildlife management strategy when you arrived at Desert and how do you think it evolved over the years?

The strategy then was- it was more or less when I got here, it was mainly protecting the habitat. Because we don't have as much control over sheep habitat as, let's say, you would have over waterfowl habitat where you can regulate a lot of variables in the marsh to make it more attractive to the waterfowl. So when I got here it was more or less just a protection status, you know, keep the vehicles on the roads, don't let people camp by the water holes. There are only a few things we could do to really improve habit conditions for sheep. They weren't doing them then, they weren't building water catchments and they weren't using fire. And you can't create more space or leggy terrain. They have always been hands off. We can make no more space out here or we can't create more cover. We can't create earthquakes to generate updrafts to create escape terrain in the mountains. Like all wildlife species, they need four things

to survive. They need food, water, shelter, and cover or space. Well, the only ones we had any options for, was forage and water. And when I got here we were not doing anything like that. But then as I got involved with the fraternity and stuff, we started building some waters and had some pretty acceptance by the animal. We were getting sheep to use areas in the summer that in previous times they had to leave those areas and go back to a perennial spring somewhere to summer because there was no water in that lower terrain. Which, in a lot of cases, that is where the sheep prefer to be, in that lower desert shrub terrain rather than up in the high-timbered area that may have the higher water in the springs located there. So we got into building waters and had some good success. And some of my predecessors had tried to enhance habitat by doing water but at that time they didn't have helicopters and they went out and built some guzzlers or rainwater catchments, whichever terminology you prefer, at some low elevations along some roads, and the sheep wouldn't use them. So when I got here, they had basically discontinued that program. But I could see that there was potential there. It just needed a little refinement on filling the habitat equation of providing more water. We starting air lifting and hauling stuff a little higher up the mountain and building water catchments and even selected a site where maybe you had a slick rock area, a real smooth washed area with a pot hole at the bottom of it that maybe just ephemerally held water. But the sheep would know that. So, if you go out there and there is a natural rock pocket that in good times would hold water, if you build a big facility there that would hold thousands of gallons of water, your odds are going to really jump up that sheep are going to find that facility, lock in on it, and use it, and develop a local population off your rain catchments you built. And we did. I've built 24 of them since I've been here and I think I have got one that I didn't see a real positive response from the sheep. And our sheep populations have declined even though we have built all these waters. And so, there's some segments of the society would say "Hey, you haven't done any good by expanding availability of water holes as far as increasing your sheep population." But that is unfair to say that, because there are a lot of variables out there that have affected this population that I don't have control over: predation, disease, lowland survival, whatever the cause of that may be. Those are the factors that have caused the population to decline. In those areas where we have built a water catchment, and the sheep have come in and found it and set up a little subpopulation -- these are some of our best herds. Remnant herds that didn't suffer the declines that the more traditional sub-populations have, that were centered off a natural spring where they were in high timbered areas where visibility was limited. Those are the populations on the natural waters that have taken the biggest hit: the sheep mountain range where our high estimates in the 80's were around 1600 to 2000 sheep. Almost half that population was on the sheep range where all our natural waters are. That population has declined from the thousands roughly down to 200 animals where the natural waters are. These other ranges where we went in and added water, they haven't sustained the population decline that the sheep range have. So I am a believer in it. I think you can overdo it. I think a sheep is an animal that on every mountain range, it populates, it wants areas that it will use in the summer and then it wants an area in the wintertime. I have to explain to you: a sheep don't need a drink, he only drinks about three months a year. And when they disperse away from a water hole, they should be able to go to an area devoid of water. If it is devoid of water, there has been no sheep there early in the summer depleting the forage base. They are going to an area that an animal like a mountain lion that is not as hardy as they are, can't follow them into that dry country, because they can't go all winter without a drink. So you need to have an area set aside in every mountain range that is sheep winter range that is devoid of water, that hasn't been foraged on all year long, that is incapable of supporting a lion population. Chances are it is lower so it is more snow free. So they don't have to deal with inclement weather in the winter weather time. I'm not a proponent of sprinkling water from one end of a mountain range to the other. I am a proponent of going in there where you have what appears to you good summer habitat and developing water there so you can build a population there and expand on your total for the refuge. But yet, leaving certain sections of that mountain range devoid of water for the reasons I just listed. And that is a hard thing that we have with our sportsmen. They see the positive results of building water - hey, there's lots of sheep there, so if we build more water, we will have more sheep. So then the more sheep, then the better, better thing. But they don't look at the big picture. You can overpopulate an area and then you can have a terrible population decline. You can have no escape area from predators because everywhere they go, the wild predators have a water source so we have to look at the big picture, the whole life history of that animal. He didn't grow up in a desert environment where there was water around every turn in the mountain. He grew up in an environment where there were localized water sources and in other areas there wasn't any. That's the type of terrain or habitat he is adapted to. And he is just trying to mimic that. And by going in a totally dry

area you can mimic what would occur in a mountain range that had some water and some dry area. You just have to sit down like you and I are talking now, and explain what the life cycle is, and flooding an area with water is not necessarily always a good thing. I kind of rounded about that, but I think you understood.

That's taught me a lot. I didn't think about that.

Assimilate what you have learned and present it to your peer.

That's good. I think you just said it. How do you assimilate all the things you have learned here? Is this written down somewhere? I saw you taking detailed notes the other day. Is that how you bring your data back, for future use and historical record?

Yes. I have done a good job of keeping track of what we have done in terms of water development and some of the use patterns that I have observed after we completed the project and put that into our file system so that my replacement can go back and look at that and see what worked and what didn't work or how well it worked. And that is the kind of information that hasn't been shared that well with the academic community. I think that is why we are seeing a lot of push from say the Wilderness Society that are opposed to anything artificial out there. They are saying sheep have survived for centuries without man-made water catchments. Why is it so important that we do that now and disturb the landscape? As me, as a person, and desert sheep biologist as a whole, have not done a good job of taking the results of our water developments, the positive aspects of it, putting it into a format and got it out to the public whether it be the Wilderness Society or any one else and strongly demonstrating what the benefits can be. They only look at the historical record of the sheep and they see that there are not that many more today than there was at the turn of the century, even though we have built these water catchments, so then it appears that they have made no difference. But, of course, a lot of other things have happened in the last hundred years beside water sources being piped off for mining or urban development. So the water sources have made a definite impact as far as maintaining populations in Nevada and Arizona and the other southwestern states. And we have not been doing a good job at convincing the folks that oppose that strategy, of the positive aspects of that. It is always something that is just a personal pet peeve of mine and I realize that we are drawing a lot of water. That is why I like to say man-made water catchment rather than artificial water catchment because water is not an artificial component of the habitat. Water is not like metamorphisms. Water occurs in nature. It is a natural component out there. We may have artificially affected its distribution or its availability in terms of quantities of gallons available. But water is not an artificial component of wildlife habitat. There are very few species of wildlife that don't require water as being part of a habitat component. It all goes back to water, food, shelter and space. Water is not an artificial component of that habitat. We may affect its availability and distribution but it is not an artificial resource. Water does occur naturally in every mountain range in the Southwest. It just may not be as abundant or as widely distributed. But it is still there. And it is required by the critters that inhabit the area. So I am really – my hair stands on edge when people use the word "artificial." I know they are just grabbing an adjective out of the air when they do that. But it is one of those that I don't think is appropriate. Water is not artificial. And then, just to get as far as the other data it does get shared, well, like our survey data. All the southwestern states have banded together since 1956, or thereabout, and formed a group called the Desert Bighorn Sheep Council. And every year since in the '50's, they have gotten together. Biologists from Arizona, California, Nevada, Utah, Texas, and assimilated all the survey data from all the states from the federal biologist and the state biologists, put it together in transaction form so the population data is available there to establish the trends. The resource aspect, as far as capturing animals and relocating them, whether those relocations were successful or unsuccessful, that was reported in the Desert Bighorn Council. All the students that have done telemetry work on desert bighorn sheep, the vast majority of them came to the Desert Bighorn Councils and presented their findings from their research to the group as whole and it was put in the Council transaction. So, you really, for desert sheep, it is kind of unique. You don't need to go on your internet site if you are the new biologist and you had no experience working with desert sheep and start researching what the critter requires, its life history, and all that. Over in the office, there is a copy of the Bighorn Council's transactions dating back to 1956. You start taking them home and reading them – that information is there for you. As a species, we have done a very good group collaboratively, between state and federal and nonprofit groups getting together and assimilating that data.

We have talked a lot about the water and some of the controversy with the Wilderness Society. Strict wilderness preservation standards where the folks don't want any alterations to a big habitat like that. Which is interesting because it takes into account how big of a land mass we are on because you really don't have that in most other refuges because they are so heavily managed and some of them were never wilderness resource to begin with, they were just a convenient spot. Now what do you say to those folk who say that since it is proposed as wilderness, we shouldn't have any of that on there. Talk to me a little about your feelings on that and the habitat issue of why we put these water catchments in, like an ethical issue.

It's a good question and of course, my answer would be different than someone who was more a wilderness-oriented manager than myself. The way I answer the critics on that subject is, first of all, you have to go back to the basics of refuge establishment. The refuge was established in 1936 and the purpose of the refuge, as the organic act says, was the desert bighorn sheep. So our purpose in management should focus on those things that make that a more stable secure population. That is where the Service's primary focus should be. Wilderness to me is a secondary objective. It is even hard for someone from a wilderness group to argue that point. The area was established for sheep and we are going to do, I mean, if you have got hair enough to stand up in front of the group and say this, we are going to take care of our sheep resource. Because that is what we were established for. And if we can improve this area by other means by designating as wilderness and protecting other aspect of the ecology by doing that land designation, then we will do that as well. But, our first and foremost priority is going to be managing the sheep, and the second of all is the person who has a genuine interest in going into an area that is unaltered by man and being in that area and having a true wilderness experience; still certainly has that capability when you have l.5 million acres and I've got 25 water catchments out there. I've never done the math and these water catchments disturb an area roughly, let's say, 100 feet by 100 feet when we built one. Twenty-four into a million and a half - there is 100 foot by 100 foot disturbed area in every 25 thousand acres of habitat out there. If that disrupts your wilderness experience you had the unfortunate experience of happening to stumble across the very canyon or the square foot of ground that we went out and added water to enhance our sheep population. You shouldn't have your wilderness experience altered at all by the work we have done. It is more of a mind set. Maybe the purist, he doesn't want to know that they are out there. But in terms of a physical disturbance to your experience, 25-100 x 100 foot sites- it's actually l.6 million when announcement of Clark County Conservation Act is passed; it is not, should not in my opinion, disturb your wilderness experience. Should not have a very high likelihood of disturbing. And there are different segments of your wilderness group. There are people who enjoy the wilderness experience and part of that experience is seeing the wildlife out there because it is something they associate with the wilderness. That particular part of the wilderness purist might enjoy the fact that they are seeing sheep and there was something man-made out there. They never saw it but it enhanced their experience because it added wildlife to the terrain they were going through. And then there is the other group that will tell you that the wildlife doesn't add to my experience. I'm out there to see a landscape that has no trails on it, no oil wells, no farm fields, and wildlife adds nothing to my experience. My gut feeling is that the majority of the people that enjoy a wilderness also enjoy wildlife in that habit as they traverse it. And if what we are doing out there is a pretty minor alteration and it adds wildlife component to their experience, it makes it more valuable as a wilderness area and not less valuable.

What were the greatest challenges facing desert bighorns in the 1970's and what are those challenges today?

In the 70's on the refuge as a whole, we weren't facing a great deal of challenges. We had relatively stable high population at that time. And I think our challenge was to maintain that quality of habitat, to not allow military activity to expand, to not allow public use to penetrate those areas that we're trying to set aside as sheep habitat. So I think our challenge was to maintain it and I think we met that challenge all right. We were able to keep the area intact. It wasn't split up for housing development. The challenge we have today, I think, is that people are going to want to demand more improved access. And now with the growth of Las Vegas and the water resources running out, they are wanting to come out here and drill our valleys and pipe that water into Las Vegas to support more business and more residential structures. And I think

our challenge is to stop that. And also a lot of our population decline is, in my opinion, predator related on the sheep ranch. I didn't think that initially. Because if you read the literature, at least the stuff published early on, it pretty much indicated that lions did not prey heavily on sheep, that the deer was a primary prey base for those. But I think as we saw some of western deer herds decline in the '80's , I think we saw some shifts in predation pattern on mountain lions and actual shifts in their distribution as well. The research that was conducted more recently is showing pretty clearly now that what we believed to be fact in the '50's and 60's that lions weren't a factor, when it came to maintaining desert bighorn population visibility are. We have seen it in southern California on the peninsula ranges, we have seen it in the San Andreas range in New Mexico, and I think we have seen it here on the Desert National Wildlife Range. After we experienced our declines from the mid '80's to the present time, we started doing a little reintroduction on the sheep range thinking we could just possibly give it a shot in the arm and speed up that rebuilding process. Of course, those animals that were released there, we radio collared a good sample. And I found that 50 percent of the mortalities of radio-collared sheep were due to mountain lions, which is significant. Historically, mountain lion predation didn't constitute that high of a mortality factor. So I think it is a challenge today, getting over that hurdle. And it is something that occurs naturally; the lions may eventually decline their numbers and the sheep expand theirs and things go back to what they were in the mid 80' or prior to that time. But, it is a challenge not to go out there and do some control. I think you may reach a point if things don't turn around, you may have to do some control. I know that is something that upper management doesn't like to present to the public, that we are going to take the life of one animal for the benefit of the other because people get upset when you talk about predator control. I think on a very selected basis, it may be something we have to do.

A people question for you. Who were some of the more colorful refuge managers and other personnel that you might have worked with at Desert? Do you have any good people memories or things of that nature?

I worked for some good managers in my early career – Bob Yoder. I recall he always thought it was easier to get forgiveness than it was to get permission. So maybe it's bad. I have kind of lived by that management strategy since I've been here. I haven't gone out announced at public meetings and stuff that we were going to build a man-made water catchment up on the mountain range or done a lot of paper my counterparts and the Division of Wildlife were doing, having positive results, and I wanted to do it, did it and I didn't ask permission to do it, I just did it and I think I have had some good results. It was good to manage by "it is easier to get forgiveness than it is permission" sometimes. Now, we have CCP's and now we have gone all into this planning phase with public meetings and we have been doing that for three years now and we are not any closer, or much closer, to getting our plan written than we were three years ago. If we had a problem that we wanted to address back in those days that we know the answer to, and went through the process that we are now, we never would have got out there and fixed that problem. We would still be hashing it over. Dave Brown, he was the Refuge Manager after Bob Yoder. Very hard-working, very supportive, very good keeping attuned to what was going on in all the different stations. In my opinion, just an outstanding manager. He had worked in the field. I'm not exactly sure what his previous duty stations were but he had gone out of the refuges and gone into the regional office and was the Deputy Associate Manager and had that regional experience and then came back to the field to end his career. He was very balanced and a hard worker and supportive of what his staff was doing. Just an outstanding manager. When he went to work he started at eight in the morning and worked every minute of the day until quitting time. I would watch him sit at his desk and eat his lunch and continue to work during his lunch hour. And if you need help even with the paper stuff, if you were out trapping sheep or something and you didn't have time to write an inventory plan and he had a little free time, he would pick up a pencil and a pad of paper and start writing the ____inventory plan or whatever the regional office or Washington office said was due. He would help you. If I was pouring concrete he would come out and help me. But he had enough background, he could go back into the office and do the administrative stuff, too. I don't know if I worked with anybody that I would call a character, one of these guys that just tickles your humor or does something just off the wall. Not since I've been here. Everybody has just been pretty straight up, honest, hard working people. They didn't have any personality quality that made them kind of stand out in a crowd. I suppose I've had different people I've met working here, you know, just some of the guides with some of the stories they would tell and some of their experiences were pretty interesting. I was

hearing it second hand and it was interesting to me, but to pass on in this interview, it probably wouldn't mean much to the next guy.

How have the neighbors – that's a broad term – rather, the residents of Las, I guess, or whoever you consider to be neighbors of the refuge, how have they viewed Desert over the years?

The local community really isn't all that aware of our existence. Our public profile or image is still really low. They still think the Fish and Wildlife Service is no different from the Bureau of Land Management. I mean, it is not uncommon to this very day to go out and talk to a visitor and they will ask you what is out on this BLM land, or to be called a Ranger instead of a biologist, you know, the old Park Service terminology for someone who works with the resources. And our visitor use is still, in terms of what the population is in the valley, very low. So our rate at which we are spreading information about the refuge or the Fish and Wildlife Service, is far below the growth rate of the valley. We are trying to change that. We have hired a recreational planner but that particular person hasn't had the opportunity to go out and interface at the high school level or the community level and get our message out to the public yet. And our visitor facility here, the little visitor contact station, our little kiosk, isn't the kind that would draw them in so they could self educate themselves. And it is definitely an area that we need to work at. I think we have to work at it smart, don't think we just want to go to town and advertise the fact that we have this beautiful untouched area out there and tell everyone to fire up their dirt bikes and SUV's and come out and see what we have to offer. I think we want to bring people out and teach them about the area under controlled conditions that are suitable to getting the message out and preserving the habitat both. And it's a challenge. We are dealing in the age where people want instant gratification; they don't want to have to hike any distance to see a sheep. They want to be able to drive out, click their digital camera, gather that image immediately and get back to town to their DVD player or whatever electronic entertainment that they enjoy. Or go play a slot machine, or whatever. It's a challenge. We are dealing with a different clientele than we were even twenty years ago, where a higher percent of our public users came from an outdoor or hunting fishing background, or a farming background, where they were used to getting out and working up a big sweat to accomplish their tasks. We are not dealing with quite the same clientele that has that mentality anymore. There are a lot of folks that could care less if they ever saw a desert bighorn sheep. They might be very important to them in terms of their peace of mind. They like to go to bed at night knowing that the wild animals are secure as they are when they go to bed in their own home, because they think they are one of God's creatures and they should be allowed to coexist. But so many of them are perfectly content even though they are concerned about the animal, learn about it from watching the Discovery Channel. They don't have to see it first hand to enjoy it. They just want to know it is protected and they want to know it is out there in case they ever want to go and see it, or when their grandkids want to see it, it is still there. But to physically do it themselves is maybe not important to this generation, as it was to previous generations.

What are you most proud of from your 26 years working here?

I think I am most proud of the work, the hands-on work as a whole we have done, the water development we've done, some trans-location of sheep, we've reestablished sheep in the _____Mountain Range where there was no population when I got here, and now we have a viable population over there. Some of the research findings, they were good results, but they were not pioneering stuff. Others have found similar results as a result of doing telemetry relocations. And developing a good working relationship with what I call a serious outdoor community, and my partners at the federal and state level, particularly the Nevada Department of Wildlife at state level. We have always just worked very well together. I have had periods where I was doing surveys and I couldn't get another staff person to fly with me to record data, that I could call them, and they would come fly with me. Or if I need someone to help sling water materials to a water site, one of those guys would come and help me. And when they needed help, I help them. I have flown all over southern Nevada, off the refuge on week-ends, building water holes and out monitoring sheep populations and helping trap animals off the refuge, lending what little expertise I had to the operations. It's desert sheep in the Southwest. It's definitely one of those things, you know, you get out of it what you put into it. If you help other people, they will help you, and that has happened. I have helped them and they turn around and help me. And I think the resource is better off for it. I definitely want to see my

replacement maintain these relationships because the net result is the resource gets positive benefits. You know, two people working together can accomplish more than one person. In my efforts working with the NGO's and the state folk, you know I have gotten some pretty nice awards for that. I'm not much of an award person; I don't like to be the center of attention. But, I will say about the awards that I got from the fraternity, it's more gratifying to get them from somebody who doesn't even work with you on a daily basis in the agency, than it is a Fish and Wildlife Service award, because sometimes in the Fish and Wildlife Service it seems like, well, if you give one staff member an award then maybe next year you award the other staff member. It is that sometime they are given to keep harmony. They may not be necessarily always given for outstanding work, but if you are being recognized by your peers outside your own agency, then that means to me that they appreciate what you do and all your efforts. I've had a water hole named after me off the refuge and I recently received an award, the President's Award from the Fraternity for 25 years of service of dedicated service to the desert bighorn sheep. I can go to northern Nevada where another NGO, the Nevada Bighorns Unlimited is located and talk to their membership and they always want to thank me for what I do for something they care about. So it has been good. Times are changing and it is time to go on. But I have no complaints.

That's great. What was or is your greatest frustration? Maybe I should have asked the other one first. Don't want to get you high and then bring you down.

My greatest frustration has just really come in recent years and that is that I realize that the agency, as a whole, is getting pressure from the top of the government, from the President, from Congress, to do a better job of getting our message out to the public, doing outreach, providing our elected officers, constituents, more services. And I agree with that – we need to provide them with more outdoor recreational opportunities where we have opportunity to do so and more educational information. But in the process of doing that, now we have project leaders and those in the regional offices who are so attuned to Washington Fish and Wildlife Service requests and congressional requests, to maintain their quality step increases and everything that you get at that level of management, you are having to bend over backward to appease these demands for outreach and environmental education and expanded recreational opportunities, and we are losing sight of what our original mission was. We are still here for the resource, like the Organic Act says that wildlife is number one and that is where our budget and time, at least a majority of our time, should go, and I don't see that. I see maybe 10 percent of the Fish and Wildlife Service effort going toward habitat and actual physical habitat improvement and inventory, and the other 90 percent is to provide information whether it regards the other things just mentioned, the outreach, or it is just administrative information we are providing the OMB, where our dollars are going, the new ABC program, the new ideas program, the new CCCP planning process, SANS program. We have people now spending half the year just taking training so they will be able to implement the other 50 percent of the year to these new programs. And I know we need to be responsive in terms of telling the public and Congress where we are spending our dollars. But the process can't become so cumbersome that you spend all your time recording the flow of money and justifying it, that all the money is used on the people just to prepare the reports. None of it is spent on materials or actual habitat improvements. I've seen something come out of, I don't know whether it was the Refuge Director's email or what, that they had hired like 590 new refuge employees or new Fish and Wildlife Service employees over the last couple of years and like 500 of them had gone to the field. I don't know where they pulled those numbers out from. I don't see people out in the field doing habitat management or inventorying species. I see people reporting to Congress, sitting in CCCP planning meetings, meeting with the water districts, fighting over water resources. There is just a handful of people that are still out there on the ground, actually trying to do the day-to-day operations that we have done for all these years. I don't think we are putting our money where our mouth is. I don't think we are being honest to Congress. I don't think all those dollars are going for the resource. I think they are going for writing new budget programs, and teaching people how to run them.

What advice did you give to other Fish and Wildlife Service biologists?

My advice is if you wanted to be a field level biologist to not go to work for this agency. That would be my advice. It depends on your personality. If you are a more diversified person, you enjoy interacting with the public during coordination meetings, you enjoy some time spent at the field level doing inventories, you

enjoy some time on report preparation and environmental assessments, if you like that type of work where you are diversified between the paper work, the hands on, and everything in between, come to work for this agency. But if you are, our maintenance man uses the term all the time, if you are a dinosaur, and if you still just want to spend just 90 percent of your time out there working either with the animals or their habitat or even on stuff that directly supports inventories or habitat improvement, then my suggestion is you wouldn't want to come to work for the Fish and Wildlife Service because we are not an agency that is headed in that direction. We are an agency that is headed in the direction of outsourcing that type of work. We are so busy reporting our efforts to Congress or to upper management and recording our day-to-day operations on outreach, budget expenditures, equipment maintenance, public use activities and all this. All these fields unrelated to actual habitat or wildlife management. The new biologist is not going to have the opportunity I did. He is going to have all these other things thrown on his plate and his supervisor expects him to clear his plate of those tasks. And once he does he is going to have the opportunity to go out and do the things he dreamed about when he was a college student. Well, by the time he clears the plate of all those task that he has been assigned, his hours in the field are going to be damn limited. Even the technology aspect of it, you know, now where you are doing GIS and those types of planning, electronic planning report. It takes a lot of training and office time to generate that type of information. It's wonderful when all the data is plugged in and you have all these layers of information out there from vegetation, to distribution of mammals, and distribution of birds and recreational activities. It is a wonderful planning tool but that GIS specialist is very labor intensive for that person to go in there and actually input all that data and turn out a report in a readable format. I know are hiring people specifically to do that. But still it takes time on the biologist's part just to gather that information before he feeds it to the other person to synthesize. I would work for a state agency, but even they are not exempt from it either; their biologists are spending a lot of time in meetings and synthesizing their budgets, their budgets for next year's funding. It is a sign of the times. We are just becoming a more, not more bureaucratic, just becoming more accountable for our actions. So we are spending so much time inputting the information or designing programs to input information into, so that we can be responsive to anybody that asks the question.

Did you feel that with the late plume in technology itself on this refuge and how isolated you were, do you think you were shielded from that push? It seems like a lot of that has been going on for a while.

You are right. I was very much shielded from it. Because we didn't have the phone line and I couldn't put a mapping program in there where I could type in lats and longs and coordinates and all that. I didn't have to spend a lot of my time putting the data into an electronic format. It was just in a handwritten or typed format that was stuck into a file folder and I could do that very quickly and then go out and gather more data. That's true, very true. Actually we have been in that mode for quite a while. I'm just now being pulled into that mode, dragging and kicking at the very terminus of my career.

Have they been trying to get you into that for a while? You kind of used the "here's how I have been doing it and it has worked so far, why do I..."

Not so much that strategy, because I could see the method to the madness, learning some of the techniques particularly, like what I was dwelling on in the GIS stuff. And I know they wanted to send me back to NCTC to go through GPS training to increase my skills so that we could start plotting sheep locations and other data into a GIS format. We can't afford a good GPS unit right now, like a Trimble or something, and we don't have the time to go out and carry the unit around and map out the boundaries of certain vegetative type, or whatever layer of data that we are trying to put in it. By the time I went there and got the training and come back, I would be retired. I mean, it is a waste of my time to go there and get the training and then come back and wait three or four years to get the equipment in the time it is necessary to go out and do it. I am better of in that month just staying here and doing things the old way.

And also, if someone had to go out on the ground, I don't know if this is the way you do it, I don't know that much about GPS or GIS, both of them, but if you have to walk around and physically push that button every time to delineate vegetation, sheep and what not, this is 1.5 million acres, it seems like that would be an army of people doing that.

That's right. You actually need to have not only the funding to get the personnel, but you need aircraft and all kind of stuff, like they are doing on the fire program. When they have a burn, they have the helicopter under contract and they are flying the perimeter of that burn with an onboard GPS unit. It's not something on acreage of this size, you can go out with a hand-held unit and map out all these data layers. It won't work. I think we have covered the bases pretty good. I don't know of the only thing - you know, we were talking as we came off the mountain today, about some of the tasks that we, some of the older personnel, have done over the years that maybe were, I don't know if under-appreciated is the right word, I think our efforts have always been appreciated. I have always felt they have been. Under-evaluated, as in terms of the hazards. When historically a lot of areas have been blessed with very small staffs and I am certainly not the only person in the Fish and Wildlife Service that has experienced where we had to fight fires one day and run heavy equipment the next and strap on your gun belt and go approach a visitor who wasn't following the rules and guidelines and maybe the fourth day get up in a helicopter and fly at low elevation and mountain terrain and get bounced around like a ping pong ball and hope you didn't bounce off a cliff wall somewhere. Personally, I don't think because of the retirement system favoring just the fire personnel and law enforcement personnel because their jobs were hazardous, they get an added benefit in terms of percent of retirement and in terms of when they can leave, being allowed to leave a little earlier in their career, I think most of the people on these stations with small staffs –they did it because enjoyed it, and I would do it again – but in the process of doing it, they have kind of put their health and safety on the line a lot of times and the Service has never really acknowledged that. You know, I have been in a helicopter crash, I've been on equipment that has tipped up, and fortunately it didn't tip over. I've had to approach refuge visitors who were drunk or obnoxious when I had law enforcement authority and deal with that situation. And I don't know if we, as jack-of-all-trades that have done that in our careers, deserve maybe the same benefits that a fire or full-time law enforcement person, but I think we have done a lot of things that you couldn't ask just general members of the public to do on a routine basis and get them to do it. We have had a cadre of people that were willing to put their all into doing a job that was at times, hazardous to our health and safety. When we got invited, kind of by the flirt team, to put our applications in for 6C coverage and the Service didn't even really acknowledge that we even potentially had a valid claim. They just started rubber stamping them as reject, reject. I thought it was handled very poorly. They could have denied our claims and done it in a less offensive way. I don't want to cry sour grapes because I don't feel like I have been abused at all in my career. I have been very fortunate to be allowed to do the things that I have done and given that opportunity and I am not going to criticize those that gave me that opportunity. I think there are some areas they could improve but it wasn't that big a deal.

This has been August 23, 2004, the life and times of Bruce Zeller. Thank you, Bruce.

You're welcome.